

# Measurement of Total Labor Productivity Growth by using Eora MRIO and OECD WIOD

Topic: 714D Productivity and Efficiency (2)

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## 1. Introduction

We measure productivity growths of China, Japan, South Korea and others by using the indicator of total labor productivity (TLP, ratio of output to total labor). Total labor includes direct and indirect labor. Indirect labor means labor used for production of raw material, machine etc. As an indicator of productivity growth, the TLP is better than TFP (traditional total factor productivity) in respects that TLP is productivity which includes fixed capital efficiency growth and that TLP can be measured regardless of competition condition etc.

Until the last paper, we measured TLP by using national input-output tables. In this paper we will measure TLP by using international input-output tables and will compare that results with the results used national input-output tables.

The research questions are improvements in method for measurement of productivity growth and more accurate measurement results of productivity growths of China, Japan, South Korea and others.

## 2. Method

We will calculate productivity growth rates of China, Japan, South Korea and others in the following way.

2-1 First we calculate total labor quantity per a unit price of product by using national input-output tables. Here fixed capital consumption and gross fixed capital formation are endogenous sectors.

In this calculation, total labor quantity of import commodities is the weighted average of total labor quantities of export commodities.

2-2 Next we calculate total labor quantity by using international input-output tables. Here also fixed capital consumption and gross fixed capital formation are endogenous sectors.

In this calculation, total labor quantities of import commodities is the total labor quantities inputted in production of that commodities in the export countries.

2-3 The price in the calculation mentioned above is current price. We will convert the results from per a unit current price to per unit constant prices by using the deflators.

2-4 We get product quantity per a unit quantity of labor by calculating the inverses of labor quantity per a unit price of product.

2-5 We calculate TLP growth rate by using product quantity per a unit quantity of labor .

## 3. Data

We use Eora Multi-Region Input-Output Tables (MRIO) and OECD World Input-Output Tables (WIOD) through internet. (Our deepest thanks to Eora and OECD)

## 4. The novelty of this research

Through the measurements of TLP by using international input-output tables, we can not only make a comparisons of productivity growths between countries but also search the situation that Chinese productivity growths push up the productivity of Japanese and South Korean products by productivity growth of export materials from China to Japan and South Korea. Also on the contrary we can search the situation that Japanese and South Korean productivity growths push up the productivity of Chinese products by productivity growth of exports from Japan and South Korea to China and so on.

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